

Study of LED Lighting to Replace Fluorescent Tubes

Completed Technology Project (2012 - 2012)

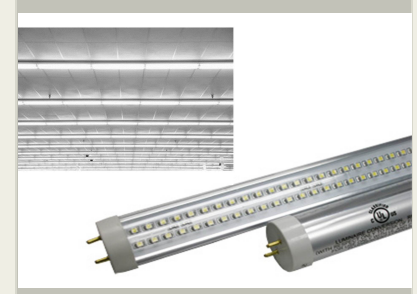


Project Introduction

Energy consumption and cost are a continuing issue in the world, including JSC Buildings. New technologies and designs in the commercial world have made available LED lighting tubes that can be easily retrofitted/replaced into standard fluorescent rod light fixtures found commonly in JSC offices/buildings. While the upfront cost of the hardware exceeds standard fluorescent rods (by 2 to 4 times), the energy savings is quoted as up to 50% or more. The retrofit time/complexity is minimal, in that the ballast must be removed or bypassed, but the rods then fit into existing fixtures. The proposal is to evaluate and test at least two COTS versions of LED light rods, in a typical office area, for the factors of overall lighting quality, energy savings, labor time/cost for retrofit, and delta in maintenance required based on quoted hardware life expectancy vs. typical cost for repair/replacement of fluorescent fixtures. This project completed retrofit of three typical office areas in Bldg. 7 with prototype LED rods from two vendors. The measured savings in operating power was approximately 73%, which did not include the savings for air conditioning from removal or bypass of the hot ballast. The measured quality of the lighting (in Foot Candles at varying distance) was greater with the LED bulbs, without consideration to the fixture covering. Retrofit was demonstrated as simple to implement. The benefits of this technology are significant, and further study to implement this new technology into laboratories and other areas of JSC is recommended.

Anticipated Benefits

LED lighting technologies are a candidate for future space vehicle design and implementation, such as the Deep Space Habitat.



Project Image Study of LED Lighting to Replace Fluorescent Tubes

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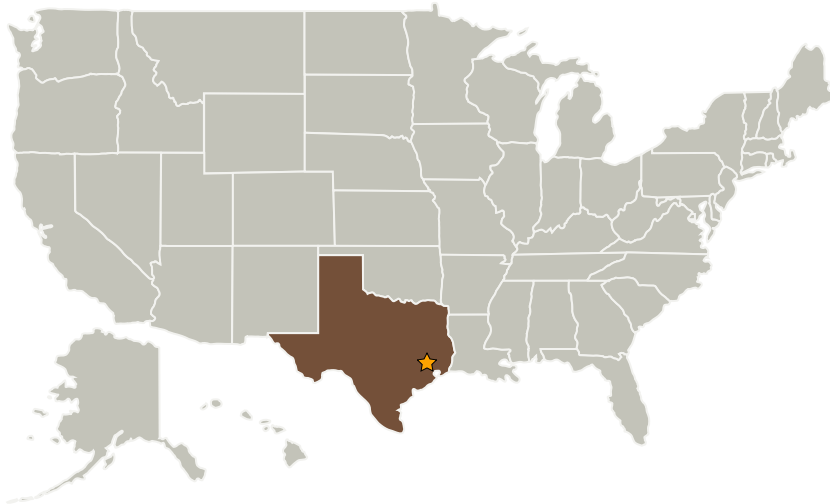
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Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas

Primary U.S. Work Locations

Texas

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Center Innovation Fund: JSC CIF

Project Management

Program Director:

Michael R Lapointe

Program Manager:

Carlos H Westhelle

Project Manager:

Kathryn M Hurlbert

Principal Investigator:

Kathryn M Hurlbert

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Images



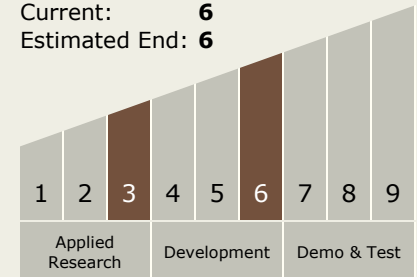
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Project Image Study of LED Lighting to Replace Fluorescent Tubes

(<https://techport.nasa.gov/image/2263>)

Technology Maturity (TRL)

Start: **3**
Current: **6**
Estimated End: **6**



Technology Areas

Primary:

- TX13 Ground, Test, and Surface Systems
 - └ TX13.1 Infrastructure Optimization
 - └ TX13.1.1 Natural and Induced Environment Characterization and Mitigation